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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant :	DIRK SELDESLACHTS	Docket No.:	98-227
Serial No.:	09/051,565	Examiner :	C. SHERRER
Filed :	June 8, 1998	Art Unit :	1761
For :	DEVICE FOR REMOVING UNWANTED VOLATILE COMPOUNDS FROM BEER WORT		

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APPEAL BRIEF

Hon. Commissioner of Patents and Trademarks
United States Patent and Trademark Office
Washington, D.C. 20231

Dear Sir:

This is an appeal to the Board of Patent Appeals and Interferences from the decision of the Primary Examiner in Group Art Unit 1761, dated April 23, 2002, finally rejecting claims 28, 32, 33, 36 - 40, 43 - 48, 50, and 53 - 70.

I. REAL PARTY IN INTEREST

The real party in interest is Interbrew, a corporation of Belgium, having a place of business at Grand-Place 1, B-1000, Bruxelles, Belgium.

II. RELATED APPEALS & INTERFERENCES

There are no other appeals or interferences known to Appellant, Appellant's legal representative, or Appellant's Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 28, 32, 33, 36 - 40, 43 - 48, 50, and 53 - 70 are pending in the application and on appeal. A copy of these claims is set forth in the Appendix attached hereto.

Claims 1 - 27, 29 - 31, 34, 35, 41, 42, 49, 51, and 52 have been cancelled.

By a supplemental amendment being filed concurrently herewith, claim 54 has also been cancelled.

IV. STATUS OF AMENDMENTS

An amendment after final rejection was filed on October 18, 2002. In an advisory action dated November 1, 2002, the Primary Examiner denied entry of the Amendment as raising new issues that would require further consideration and/or search and as not being deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.

A supplemental amendment after final rejection is being filed contemporaneously herewith. By the supplemental amendment, claim 54 on appeal is cancelled and claim 55 has been amended, in view of the cancellation of claim 54, to change its dependency to claim 28. The supplemental amendment reduces the issues on appeal by removing the rejection of claim 54 under 35 U.S.C. 112, second paragraph.

V. SUMMARY OF THE INVENTION

The present invention relates to a device for eliminating unwanted volatile components from a beer wort and to a method of eliminating volatile components using the device of the present invention.

Referring to FIG. 1, the device for eliminating volatile components from beer wort includes a desorption column (1) having at its top a system (2) for uniform distribution of the wort. The column (1) is fed through a pipe (3). If desired, before reaching the column, the wort may be passed through a heating system (4) which increases the temperature of the wort by exchange of heat with steam arriving via pipe (5) with the condensate being extracted via the pipe (6).

The heated wort passes through the pipe (4a) into the column (1). The wort then flows due to its weight through the interior of the filling region (7). Piled up rings in the

region (7) increase the surface area of contact between the wort and a current of inert gas or steam. The rings rest on a bottom plate (8).

Steam or an inert gas such as nitrogen is fed from the pipe (9) into the interior of the column (1) through a uniform distribution system (10). In one embodiment of the present invention, the beer wort is distributed downwards and the current of inert gas or steam is distributed upwards.

At the end of its path through the filling region (7), the wort falls onto a collector system having an inclined surface (11) from which the wort flows across a baffle (11a) into the bottom part (12) of the column (1) without any significant quantity of foam being formed. If desired, instead of a single inclined surface, a plurality of inclined surfaces may be provided. The collected wort, from which the volatile components have been removed, forms a buffer area in the bottom of the column that is then extracted via the pipe (13) to cooling and/or fermentation tanks.

A condenser (14) is provided to recover the steam used to treat the wort and the eliminated volatile components. The condenser receives cooling water via pipe (15). After flowing through the condenser (14), the cooling water is extracted via the pipe (16) and the condensate containing the volatile

components is extracted via the pipe (17) to a drain or another device for storage or subsequent treatment.

Referring to FIG. 2, the plate (2) for uniform distribution of the wort comprises a metal base (18) with orifices (19) and chimneys (20) regularly arranged on its surface.

The number and the dimensions of the orifices and the wort flow rate are chosen so that a particular and substantially constant volume of wort remains on top of the base (18) throughout the treatment, the height of the chimneys (20) being such as to prevent the volume of wort remaining on the base (18) passing through the chimneys (20).

FIGS. 3 and 4 show one embodiment of the bottom plate (8). The bottom plate (8) is a corrugated plate with orifices (21) in it through which the filling region communicates with the bottom of the column. FIG. 3 shows only some of the orifices; however, it should be understood that there are orifices (21) over all of the surface of the plate (8).

Referring now to FIG. 5, the uniform distributor (10) for the current of inert gas or steam comprises a main pipe (22) communicating with a plurality of secondary pipes (23). The bottom faces of the pipes (22) and (23) incorporate orifices (25) enabling uniform distribution of the steam or the inert gas inside the column. The inert gas or steam is therefore

initially expelled towards the bottom of the column, afterwards rising towards the top part of the column,

The flow rate of the steam or inert gas is preferably approximately 0.5% to approximately 3% by weight of the flow rate of the wort.

The method of the present invention broadly comprises: heating the wort at a temperature substantially equal to the boiling point of the wort at a predetermined internal pressure; separating unwanted volatile components from the wort, which separating step comprises providing a column (1) having a distribution plate (2) at the level of a top part of the column and a bottom plate (8) at the level of a bottom part of the column, which bottom plate is a corrugated plate having a corrugated surface and has orifices (21) over all of the corrugated surface, which orifices (21) provide a free surface area of at least 90% of the cross sectional area of the column; providing the distribution plate with a plurality of orifices for uniform flow of the wort in the column, and providing a plurality of chimneys (20) on a top surface of the distribution plate for uniform flow of steam or inert gas in the column; said separating step further comprising introducing the heated wort into the column (1) above the distribution plate (2) and feeding and uniformly distributing the current of inert gas or steam in a bottom part of the column below the bottom plate; passing the

wort through the orifices in the distribution plate in a descending direction and at a flow rate which allows a volume of wort to build up on said top surface of the distribution plate, while allowing the steam or inert gas to separately ascend through the chimneys of the distribution plate so as to reduce contact between the wort and the inert gas or steam; creating an ascending current of the inert gas or steam at a temperature substantially equal to that of the heated wort inside the column beneath the bottom plate; placing the descending wort flow in contact with the ascending current of inert gas or steam so as to eliminate unwanted volatile compounds by flowing the wort through filler bodies directly supported by the bottom plate; collecting the wort below the bottom plate after the wort has completed the descent; and extracting the collected wort.

The temperature of the heated wort entering the column is measured and the internal pressure within the column is controlled to adjust the pressure at level such that the boiling point of the wort at the level corresponds to the temperature of the heated wort entering the column.

The device and the method of the present invention are advantageous. Most notably, the device and the method of the present invention have reliably obtained around 85% elimination of DMS (dimethyl sulphide) at a wort flow rate on the order of 40 m^3/h and a steam flow rate in the order of 0.5 to 1.5% by

weight of the wort flow rate. (See page 6, lines 4 - 7 of the specification; also see Example I in the specification.)

VI. PRIOR ART RELIED UPON BY THE EXAMINER

A. U.S. Patent No. 4,550,029 Kruger et al. Issued 10/29/85

B. Perry's Chemical Engineer's Handbook, Sixth Edition pp. 18 - 19 to 18 - 37.

VII. REJECTIONS OF RECORD

Claim 54 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

Claims 28, 32, 33, 36 - 40, 43 - 48, 50, 53, and 55 - 70 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Appellant's alleged admission in view of U.S. Patent No. 4,550,029 to Kruger et al. in further view of Perry's Chemical Engineering Handbook (pages 18 - 19 to 18 - 37).

VIII. ISSUES

1. Has the Primary Examiner made out a prima facie case of obviousness for each of the claims on appeal?

2. Is the subject matter of each of the claims on appeal obvious over Appellant's alleged admission, the teachings of the '029 patent to Kruger et al., and/or Perry's Chemical Engineering Handbook?

IX. GROUPING OF CLAIM

Claims 28 and 43 - 47 rise or fall together.

Claims 28, 32, 33, 36 - 40, 48, 50, 53, 55 - 70 do not rise or fall together. Each of these claims is believed to be allowable on its own merits for the reasons set forth below.

X. ARGUMENTS

A. Rejection Under 35 U.S.C. 112, Second Paragraph, Is Moot

The sole claim which has been rejected on this grounds is claim 54. By the Supplemental Amendment being filed contemporaneously herewith, claim 54 has been cancelled. Thus, this ground of rejection is now moot.

B. Examiner Has Failed To Make Out A *Prima Facie* Case of Obviousness

As set forth in MPEP 2142, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim

limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. *In re Vaeck,* 20 USPQ2d 1438 (Fed. Cir. 1991).

The burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp,* 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985)

When the motivation to combine the teachings of the references is not immediately apparent, it is the duty of the Examiner to explain why the combination of the teachings is proper. *Ex parte Skinner,* 2 USPQ2d 1788 (Bd. Pat. App & Inter. 1986)

It is submitted that the Examiner in the instant case on Appeal has failed to meet his burden to establish a *prima facie* case of obviousness.

In making the rejection on obviousness grounds, the Examiner contends that Appellant admits on page 1 of the specificaiton that the well known processing of beer wort to

remove unwanted volatile flavors is known in the art. The Examiner, in applying this so-called admission, however notes that Appellant does not admit that the specifically claimed device set forth in the claims is known in the art. It is equally true from a reading of page 1 of the specification that Appellant has not admitted that the method set forth in the claims on appeal is old in the art. In fact, the only thing that is present on page 1 is that people in the beer making industry have tried to eliminate unwanted volatile aromatic components from a beer wort.

A careful review of the rejection made by the Examiner shows that the Examiner has not indicated how this alleged admission plays any role in teaching or suggesting the claimed device and/or the claimed method on appeal. Since this alleged admission is the primary element in the rejection of record, it is submitted that the rejection is fatally defective. Most significantly, the primary element has nothing to do with the claimed invention set forth in the claims on appeal. For this reason alone, the rejection should be reversed.

With respect to the Kruger et al. patent relied upon by the Examiner, this reference teaches an absorption method of eliminating volatile components from a wort (see column 2, line 7). Kruger et al. also teach the formation of vapor bubbles which provide an advantageous movement of the wort (see column

2, lines 6 - 7). In column 3, lines 21 - 26, Kruger et al. teach that the steam flows intensively through the wort and causes considerable movement of the wort and an intensive formation of vapor bubbles (see also claim 1; column 4, lines 43 - 44). Kruger et al. illustrate a column in which heated wort descends down through a series of plates (2) through overflow weirs (2a) and openings (2b) between the overflow weir and the wall of the column (4). A portion of the wort is removed and is partially evaporated in evaporator (7) with the remaining wort passing via overflow weir (6a) into the bottom of the sump (6). Rising steam or inert gas from the sump region 6 flows intensively through the wort as the wort flows downwardly from plate to plate and causes considerable movement of the wort and an intensive formation of vapor bubbles therein. (See column 3, lines 21 - 25). The wort is heated to a boiling temperature by partial condensation of the rising steam.

Kruger et al., while disclosing a multistage column device, does not disclose many of the features of the claimed device and method. For example, there is no disclosure in Kruger et al. of: (1) the filler bodies (of claims 28 and 62) for increasing the surface area of contact with the column between the wort and the current of steam or inert gas; (2) the feeding and uniformly beer wort distributing means (of claims 28 and 57); (3) the chimneys (of claims 28 and 59); (4) the plurality of orifices in

the distribution plate (of claim 28): (5) the corrugated bottom plate (of claims 28 and 57) with at least 90% of its area being orifices (of claims 28 and 60); (6) the chimney height of claims 32 and 59; (7) the plurality of rings of claim 33; (8) the corrugated grid of claim 36; (9) the main pipe with the plurality of orifices of claim 37; (10) the orifice direction of claim 38; (11) the means for collecting the treated wort without significant formation of foam of claim 39; (12) the inclined surface(s) of claims 40 and 58; (13) the wort and steam regulating and/or controlling means of claim 48; (14) the solenoid valves and/or pneumatic valves of claim 50; (15) the secondary pipes of claim 53; (16) the rings of claim 55; (17) the filler bodies of claim 56; (18) the means for feeding and uniformly distributing the current of inert gas of claim 57; (19) the flow rate of claim 61; (20) the heating step of claim 63; (21) the column providing step of claim 63; (22) the distribution plate providing step of claim 63; (23) the separating step of claim 63; (24) the passing step of claim 63; (25) the wort collecting step of claim 63; (26) the temperature measuring and the internal pressure controlling step of claim 64; (27) the internal pressure measuring and the temperature adjusting step of claim 65; (28) providing the inclined surface and flowing the wort over the inclined surface of claim 66; (29) the distribution plate and chimney providing steps of claim 67;

(30) the flow rate of claim 68; and (31) the filler body using steps of claims 69 and 70. Nowhere in the obviousness rejection does the Examiner address these 31 deficiencies in Kruger et al. and nowhere does he show where these differences are rendered obvious by the prior art - either the Perry Handbook or the alleged admitted prior art.

The Perry citation relied upon by the Examiner teaches that packed columns for gas - liquid contacting are used extensively for absorption operation and to a limited extent for distillation. It is submitted that Perry's teachings would dissuade one skilled in the art from using a plate column such as Kruger et al.'s. Perry notes that the packed columns are usually specified when plate devices would not be feasible. This alone would indicate to one of ordinary skill in the art that the teachings of packed columns and plate columns can not be combined. In the same paragraph of Perry, condition 4 favoring packed columns says that liquids tending to form may be handled more readily in packed columns because of the relatively low degree of liquid agitation by the gas. This is in contradiction with the teachings of Kruger et al. which recommend intensive movement of the wort. Again, another teaching which would lead one of ordinary skill in the art to conclude that the teachings of the two references were uncombinable.

Among the conditions unfavorable to packed columns, condition 1 says that "if solids are present in the liquid or gas, plate columns can be designed to permit easier cleaning". As wort contains solids in suspension, Perry would dissuade using a packed column for wort treatment. Conditions 3, 5, and 6 in Perry teach away from using a packed column for elimination of undesired volatile components from hot beer wort. It can be seen from the foregoing that one of ordinary skill in the art would not be inclined or motivated to combine Kruger et al. and Perry as suggested by the Examiner. The Examiner does not anywhere in his rejection provide a convincing line of reasoning which would support the combination. The Examiner also does not indicate anywhere in the rejection of record where, assuming one of ordinary skill in the art would be motivated to combine Kruger et al. and Perry, one would find the aforesaid 31 missing parts of Kruger et al. in the teachings of Perry or in the alleged prior art admission. While there are some plate configurations in Perry which seem similar to the bottom plate structure used by Appellant, there is nothing in Perry which would teach or suggest that such a plate could or should be used in a plate column.

With regard to the Examiner's comments in paragraphs 9 - 15 in the office action dated April 23, 2002, Appellant notes that while there is nothing improper in using admissions to formulate

a prior art rejection, the admission must contain some aspect of the claimed invention. There is nothing in the alleged admission which teaches or suggests the claimed device for eliminating unwanted volatile components from beer wort and/or the steps set forth in the claimed method of eliminating unwanted volatile components from a beer wort.

With regard to paragraph 10 on page 4 of said office action, Appellant is not restating the logic of the rejection. To be succinct, one of ordinary skill in the art would not modify either Perry or Kruger et al. in the manner suggested by the Examiner. The two are oil and water and simply do not mix.

With regard to paragraph 11 in said office action, the Examiner's comments do not make any sense in the context of the claimed invention. Appellant is not required to prove that there are actually solids in the wort. The invention relates to a device and a method. The patentability of the device claims on appeal is due to the novelty and unobviousness of the claimed components of the device and the patentability of the claimed method is due to the novelty and unobviousness of the claimed method steps.

With regard to paragraph 12, Appellant notes that it is up to the Examiner to make out a *prima facie* case of obviousness and to present sufficient information to allow it to be

determined where all the claimed method steps can be found in the references. This, the Examiner has not done.

With regard to the comments in paragraphs 13 and 14 in said office action, Appellant does not find them to be persuasive for the reasons stated above. One of ordinary skill in the art would not find the claimed invention in either Kruger et al. or Perry or in a combination of the two. Further, one of ordinary skill in the art would not be inclined or motivated to modify either one of these references in light of the other. Further, the Examiner's arguments in paragraph 14 point out the problem with the rejection. The Examiner is improperly focusing on results, instead of focusing on what is being claimed. It is also a recognition that Kruger et al. and Perry are diverse teachings in the art.

With regard to paragraph 15 in said office action, the Examiner has not indicated which claims have been treated as intended use and therefore given little patentable weight.

C. Patentability of Claims on Appeal

The phrase "because none of the cited and applied references and/or the alleged prior art admission teaches or suggests" used in this section of the Brief should be read as meaning the references and admission, taken alone or collectively, do not teach or suggest the feature or features which follow.

Claim 28 is believed to be allowable for the following reasons. Kruger et al. and Perry, taken alone or in combination, with the alleged prior art admission, do not teach or suggest the filler bodies for increasing the surface area of contact within the column between the wort and the current of steam or inert gas; the means for feeding and uniformly distributing the beer wort into the column located in a top part of the column and comprising a distribution plate, which distribution plate includes first means for uniform flow of the wort in a descending direction and second means for flow of the current of inert gas or steam in the ascending direction; the first means comprising a plurality of openings in the distribution plate (there is no openings in the plates (2) in Kruger et al. for the wort, only an overflow passage); the plurality of chimneys on the surface of the distribution plate; the plurality of orifices in the distribution plate being sufficient in number and diameter to allow a predetermined flow rate of the wort, to provide a depth of the wort on top of the plate, and to prevent passage of steam or inert gas through the orifices; the means for feeding and uniformly distributing the current of steam or inert gas inside the column being located in a bottom part of the column and comprising a bottom plate; and a corrugated bottom plate having means for increasing the surface area of contact which comprises orifices over all of the

corrugated surface of the bottom plate such that a total surface area through which the current of inert gas or steam passes upwardly and said current of wort passes downwardly is equal to at least 90% of a transverse surface area of the column.

Claim 32 is allowable because none of the cited and applied references and/or the alleged admission teaches or suggests the use of chimneys having a height so that the wort on top of the distribution plate can not flow through the chimneys when the column is operating.

Claim 33 is allowable because none of the cited and applied references and/or the alleged admission teaches or suggests the filler bodies comprising a plurality of rings disposed randomly on the bottom plate and thereby forming a diffuse array of stacked rings.

Claim 36 is allowable because none of the cited and applied references and/or the alleged admission teaches or suggests a bottom plate which is a corrugated grid.

Claim 37 is allowable because none of the cited and applied references and/or the alleged admission teaches or suggests the claimed main pipe with the plurality of orifices, which orifices are regularly arranged so that the current of inert gas or steam can be fed into the interior of the column over all of the cross-section of the column.

Claim 38 is allowable because none of the cited and applied references and/or the alleged admission teaches or suggests directing the orifices toward the column.

Claim 39 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests any means for collecting treated wort without significant formation of foam.

Claim 40 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests an inclined surface directed towards the bottom of the column and having means forming a baffle.

Claims 43 - 47 are allowable for the same reasons that claim 28 is allowable.

Claim 48 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the means for regulating and/or controlling wort and inert gas or steam flow rate.

Claim 50 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the control means comprising solenoid valves and/or pneumatic valves.

Claim 53 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or

suggests the claimed secondary pipes in communication with the main pipe.

Claim 55 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the use of rings having the claimed diameter as the filler bodies.

Claim 56 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the use of filler bodies between the bottom plate and the distribution plate.

Claim 57 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the means for feeding and uniformly distributing the beer wort into the column positioned in a top part of the column; a distribution plate disposed under a wort feed into the column; a distribution plate having a first means for uniform flow of the wort in the descending direction and second means for a flow of current of inert gas or steam in an ascending direction; means for creating an ascending column of inert gas or steam in a bottom part of the column, which means comprises a bottom plate having orifices; the bottom plate being a corrugated plate with the orifices being over all of the corrugated surface; and/or means for collecting the wort located

beneath the bottom plate including means for avoiding any formation of foam.

Claim 58 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the claimed inclined surface having means for forming a baffle.

Claim 59 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the distribution plate having a plurality of orifices sufficient in number and dimensioned to create a particular wort flow rate and to provide a volume of wort on top of a metal base and the claimed chimneys having the claimed height.

Claim 60 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the claimed total surface area through which the current of inert gas or steam passes upwardly and the current of wort passes downwardly.

Claim 61 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the claimed flow rate of the inert gas or steam.

Claim 62 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the claimed filler bodies.

Claim 63 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the steps of providing the column having the distribution plate and the corrugated bottom plate with orifices providing a free surface area of at least 90% of the cross sectional area of the column; providing the distribution plate with a plurality of orifices and a plurality of chimneys; introducing the heated wort into the column above the distribution plate and feeding and uniformly distributing the current of inert gas or steam in a bottom part of the column below the bottom plate; passing the wort through the orifices in the distribution plate in a descending direction and at the claimed flow rate while allowing steam or inert gas to ascend through the chimneys; creating an ascending current of inert gas or steam at a temperature substantially equal to that of the heated wort beneath the bottom plate; placing the wort flow into contact with the inert gas or steam by flowing wort through filler bodies directly supported by the bottom plate; and collecting the wort below the bottom plate.

Claim 64 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests measuring the temperature of the heated wort entering the column and controlling internal pressure to adjust the pressure at a level such that the boiling point of the wort at

the level corresponds to the temperature of the heated wort entering the column.

Claim 65 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests measuring the internal pressure inside the column and adjusting the temperature of the heated wort entering the column at the boiling point of the wort at the internal pressure.

Claim 66 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests providing the at least one inclined surface and flowing wort over the at least one inclined surface.

Claim 67 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests providing a distribution plate with a metal base, the claimed number and dimensioned plurality of orifices, and/or chimneys having the claimed height.

Claim 68 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests the claimed flow rate.

Claim 69 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests using a filler body having a low exchange surface area per unit volume to reduce wort/steam exchange.

Claim 70 is allowable because none of the cited and applied references and/or the alleged prior art admission teaches or suggests using rings having the claimed diameter as a filler body.

X. CONCLUSION

For the foregoing reasons, the Board of Patent Appeals and Interferences is respectfully requested to reverse the rejection(s) of claims 28, 32, 33, 36 - 40, 43 - 48, 50, 53, and 55 - 70 and to remand the instant application to the Examiner for issue.

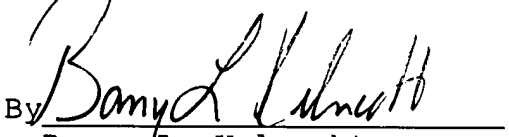
XI. APPEAL BRIEF FEE

A check in the amount of $320.00 is enclosed herewith to cover the cost of the Appeal Brief Fee. Should the Commissioner

determine that an additional fee is due, he is hereby authorized to charge said fee to Deposit Account No. 02-0184.

Respectfully submitted,

DIRK SELDESLACHTS

By 

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Date: December 23, 2002

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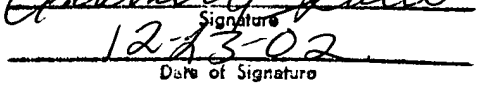
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APPENDIX

28. Device for eliminating unwanted volatile components from beer wort comprising:

a counter-current contact column for contact between an ascending current of steam or inert gas and a descending current of wort at a temperature substantially equal to the boiling point of said wort at a pressure in the column;

said column containing filler bodies to increase the surface area of contact within the column between the wort and the current of steam or inert gas;

means for feeding and uniformly distributing the beer wort into said column, said feeding and uniformly distributing means being located in a top part of the column and comprising a distribution plate perpendicular to a longitudinal axis of the column, said distribution plate being disposed under a wort feed into said column at the level of the top part of said column, said distribution plate including first means for uniform flow of the wort in the descending direction and second means for flow of said current of inert gas or steam in the ascending direction;

said first means for uniform flow of said wort comprising a plurality of orifices in said distribution plate and the second

means for flow of said current of inert gas or steam comprising a plurality of chimneys on a surface of said distribution plate;

said plurality of orifices in said distribution plate being sufficient in number and diameter to allow a predetermined flow rate of said wort, to provide a depth of said wort on top of said plate, and to prevent the passage of steam or inert gas through said orifices;

means for feeding and uniformly distributing the current of steam or inert gas inside the column, said means for feeding and uniformly distributing the current of steam or inert gas inside the column being located in a bottom part of the column and comprising a bottom plate arranged perpendicular to the longitudinal axis of the column: and

said bottom plate comprising a corrugated plate having a corrugated surface, said bottom plate having means for increasing the surface area of contact, said means for increasing the surface area of contact comprising orifices over all of said corrugated surface of said bottom plate such that a total surface area through which said current of inert gas or steam passes upwardly and said current of wort passes downwardly is equal to at least 90% of a transverse surface area of the column.

32. Device according to claim 28, wherein the chimneys have a height so that said wort on top of said distribution plate can not flow through said chimneys when the column is operating.

33. Device according to claim 28, wherein said filler bodies for increasing the surface area of contact of the wort with said current of inert gas or steam comprises a plurality of rings disposed randomly on said bottom plate and thereby forming a diffuse array of stacked rings, said diffuse array being located under said means for uniform distribution of said wort.

36. Device according to claim 33, wherein the bottom plate is a corrugated grid.

37. Device according to claim 28, wherein the means for uniform distribution of a current of inert gas or steam comprises a main pipe disposed at a level of a region from which the treated wort is extracted, in the bottom part of the column, and having a plurality of orifices, said orifices being regularly arranged on the greater part of the main pipe so that the current of inert gas or steam can be fed into the interior of the column over all of the cross-section of said column.

38. Device according to claim 37, wherein the orifices are directed towards the column.

39. Device according to claim 28 further including means for collecting the treated wort without significant formation of foam.

40. Device according to claim 39, wherein the means for collecting the treated wort comprise at least one, preferably inclined surfaced directed towards the bottom of the column and in the bottom part of said column, said surface having means forming a baffle directed towards the bottom of said column.

43. Device according to claim 28, further comprising a system for heating the wort before the wort enters the column, said heating system being connected to the column by pipe means.

44. Device according to claim 28, further comprising means for extracting the current of inert gas or steam.

45. Device according to claim 44, wherein the extracting means comprise at least one valve in the top part of the column for releasing the inert gas or the steam to the exterior of the column.

46. Device according to claim 28, further comprising means for recovering the current of inert gas or steam and condensates.

47. Device according to claim 46, wherein the means for recovering the current of steam and condensates comprise at least one condenser connected to the top part of the column by pipe means.

48. Device according to claim 28, further comprising means for regulating and/or controlling the flowrate of the wort entering the column and means for regulating and/or controlling the flowrate of the current of inert gas or steam into the column.

50. Device according to claim 48, wherein the regulation and/or control means comprise solenoid valves and/or pneumatic valves.

53. Device according to claim 37, wherein said means for uniform distribution of a current of inert gas or steam further comprises a plurality of secondary pipes in communication with

said main pipe and said secondary pipes having a plurality of orifices arranged thereon.

54. Device according to claim 28, wherein said filler bodies are comprised of large size filler bodies.

55. Device according to claim 54, wherein said filler bodies are rings having a diameter of at least 3 to 4 cm.

56. Device according to claim 28, wherein said filler bodies are piled up directly above said bottom plate in the volume between said bottom plate and said distribution plate.

57. A device for eliminating unwanted volatile components from beer wort, said device comprising:

a counter-current contact column;

means for creating a descending column current of wort within said column;

means for creating an ascending column current of inert gas or steam within said column;

said wort descending column current creating means comprising means for feeding and uniformly distributing the beer wort into said column positioned in a top part of said column, said beer wort feeding and uniformly distributing means

comprising a distribution plate disposed under a wort feed into the column;

said distribution plate including first means for uniform flow of the wort in the descending direction and second means for flow of said current of inert gas or steam in the ascending direction;

said means for creating an ascending column of inert gas or steam comprising means for feeding and uniformly distributing the current of inert gas or steam in a bottom part of the column;

said means for feeding and uniformly distributing the current of inert gas comprising a bottom plate having orifices through which the steam or the inert gas pass upwardly;

said bottom plate is a corrugated plate having a corrugated surface and said orifices are over all of said corrugated surface;

means for collecting the wort after said wort completes its descent, said collecting means being located beneath said bottom plate at a distance thereof such as to prevent formation of foam and including means for avoiding any formation of foam; and

means for extracting the collected wort for transmission to at least one of a cooling tank and a fermentation tank.

58. A device according to claim 57, wherein said foam formation avoiding means comprises at least one inclined surface directed towards the bottom of the column and said at least one surface having means forming a baffle in a bottom part of the column over which said wort flows.

59. A device according to claim 57, wherein:

said distribution plate comprises a metal base with a plurality of orifices therein and a plurality of chimneys arranged on a surface;

said plurality of orifices being in sufficient number and dimensioned to create a particular wort flow rate and to provide a volume of wort on top of said metal base; and

said chimneys having a height which prevents the volume of wort remaining on top of said base from passing through said chimneys.

60. Device according to claim 57, wherein the orifices in said bottom plate are such that a total surface area through which said current of inert gas or steam passes upwardly and said current of wort passes downwardly is equal to at least 90% of a transverse surface area of the column.

61. Device according to claim 57, wherein the flow rate of said inert gas or steam is from about 0.5% to about 3.0% by weight of the flow rate of the wort.

62. Device according to claim 57, further comprising filler bodies positioned above said bottom plate, said filler bodies increasing the surface area of contact within the column between the wort and the current of steam or inert gas.

63. A method of eliminating unwanted volatile components from a beer wort in a column by counter current contact between a descending current of heated wort and an ascending current of heated steam or inert gas at a predetermined internal pressure in said column, comprising:

heating said wort at a temperature substantially equal to the boiling point of said wort at said internal pressure;

separating unwanted volatile components from said wort, said separating step comprising providing a column having a distribution plate at the level of a top part of said column and a bottom plate at the level of a bottom part of said column, which bottom plate is a corrugated bottom plate having a corrugated surface and has orifices over all of said corrugated surface, said orifices providing a free surface area of at least 90% of the cross sectional area of the column;

providing said distribution plate with a plurality of orifices in said distribution plate for uniform flow of said wort in said column, and providing a plurality of chimneys on a top surface of said distribution plate for uniform flow of steam or inert gas in said column;

said separating step further comprising introducing said heated wort into said column above said distribution plate and feeding and uniformly distributing said current of inert gas or steam in a bottom part of said column below said bottom plate;

passing said wort through said orifices in said distribution plate in a descending direction and at a flow rate which allows a volume of wort to build up on said top surface of said distribution plate, while allowing said steam or inert gas to separately ascend through said chimneys of said distribution plate so as to reduce contact between the wort and the inert gas or steam;

creating an ascending current of said inert gas or steam at a temperature substantially equal to that of said heated wort inside the column beneath said bottom plate; and

placing said descending wort flow in contact with said ascending current of said inert gas or steam so as to eliminate said unwanted volatile compounds by flowing said wort through filler bodies directly supported by said bottom plate;

collecting the wort below said bottom plate after said wort has competed said descent; and

extracting the collected wort.

64. A method according to claim 63, further comprising measuring the temperature of the heated wort entering the column and controlling internal pressure inside the column to adjust said pressure at a level such that the boiling point of said wort at said level corresponds to said temperature of the heated wort entering said column.

65. A method according to claim 63, further comprising measuring the internal pressure inside the column and adjusting the temperature of the heated wort entering said column at the boiling point of said wort at said internal pressure.

66. A method according to claim 63, further comprising:

providing at least one inclined surface directed towards the bottom of the column with said at least one surface having means forming a baffle in a bottom part of the column; and

flowing said wort over said at least one inclined surface.

67. A method according to claim 63, wherein said step of providing said distribution plate comprises providing a

distribution plate with a metal base, wherein said step of providing said distribution plate with a plurality of orifices comprises providing a plurality of orifices in said metal base sufficient in number and dimensioned to create a particular wort flow rate and to provide a volume of wort on top of said metal base, and wherein said chimney providing step comprises providing chimneys having a height which prevents the volume of wort remaining on top of said base from passing through said chimneys.

68. A method according to claim 63, wherein the flow rate of said inert gas or steam is from about 0.5% to about 3.0% by weight of the flow rate of the wort.

69. A method according to claim 63, further comprising using a filler body having a low exchange surface area per unit volume to reduce wort/steam exchanges.

70. A method according to claim 67, wherein said filler body using step comprises using rings having a diameter of at least 3 to 4 cm.